

FIREBLOCKING AND DRAFTSTOPPING

R302 International Residential Code

presented by: russell thornburg

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In Reference to all: Materials / Products / Illustrations / Pictures
of this Presentation

"DO NOT ASSUME:"

- ...that any picture in this presentation is in compliance of code, manufacturer's listing etc...
- ...that any product has been fully researched to the intent of the code
- ...that any product that can be sold / purchased meets any code requirements
- ...that any one product has been tested and meets the intent of any past/current adopted codes
- ...that any product has been properly installed unless you have done a complete research of that product through the manufacturer's installation instruction, approved acceptable tested listing, and have reviewed its current evaluation report requirements.

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Background:

Building Contractor - 1984 to present
Building Inspector Technician - 1987 - 2 years
Field Inspector - 1997 - 2020
Residential Plans Examiner - 1997 - to present
Code Development Committee - started 2001
Instructor - 1998 - present
Code Consultant - 2005 to present
Program Manager - Short Stint

www.thornburgcodeservices.com

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REFERENCES

E84—2016: Standard Test Method for Surface Burning Characteristics of Building Materials

R202, R302.9.3, R302.9.4, R302.10.1, R302.10.2, R316.3, R316.5.9, R316.5.11, R507.2.2.2,
R703.14.3, R802.1.5, M1601.3, M1601.5.2, P2801.6

E814—2013A: Standard Test Method for Fire Tests of Penetration Firestop Systems

R302.4.1.2

E136—2016: Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C

R202, R302.11

E119—2016: Test Methods for Fire Tests of Building Construction and Materials

Table R302.1(1), Table R302.1(2), R302.2.1, R302.2.2, R302.3, R302.4.1, R302.11.1,
R606.2.2

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FIRE BLOCKING



R302.11 Fireblocking required for wood-construction
Fireblocking material shall meet Section R302.11.1

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FIRE BLOCKING DEFINITIONS

- **Draft stop:** to divide a large concealed spaces into smaller compartment (Intent: limit the movement of air w/n the cavity, reducing the potential rapid fire spread)
- **Fire block:** resist free passage of fire to other conceal spaces (Intent: to isolate movement from vertical to horizontal concealed areas)
- **Fire stop:** is a opening protection in rated assemblies
- **Fire barrier:** fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained.

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FIREBLOCKING

- Combustible construction
 1. Fireblocking shall be provided to cut off **both**
 - a. vertical and horizontal concealed draft openings **and**
 - b. to form an effective fire barrier between stories, **and**
 - c. between a top story and the roof space

R302.11

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FIRE BLOCKING

WHERE REQUIRED

- Concealed spaces of stud walls **and** partitions, furred spaces **and** parallel rows of studs **or** staggered studs:

Vertically at the ceiling and floor levels
Horizontally at intervals not exceeding 10'



R302.11

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R302.9

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FIRE BLOCKING

WHERE REQUIRED

- All interconnections between concealed vertical and horizontal spaces **such as** soffits, drop ceilings & cove ceilings.



R302.11

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FIRE BLOCKING

WHERE REQUIRED CONTINUED

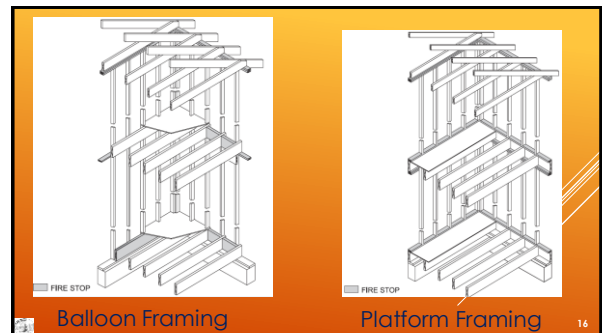
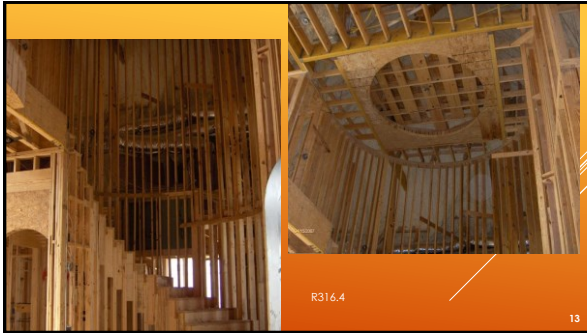
- Concealed spaces between stair stringers at the top and bottom
- Along the side of stairs **if** under stairs unfinished
- Openings around vents, pipes ducts chimneys and fireplaces

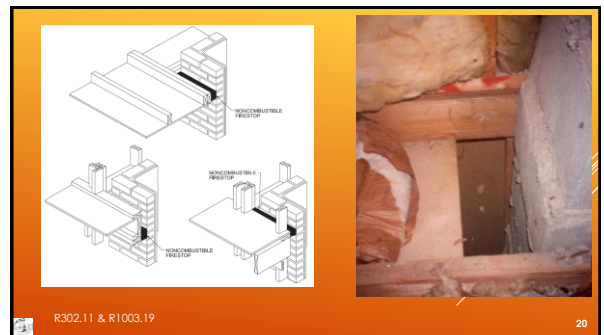
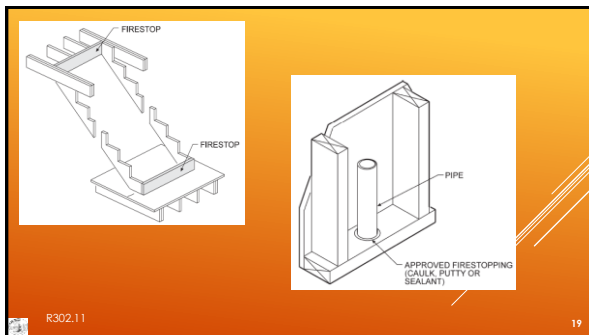
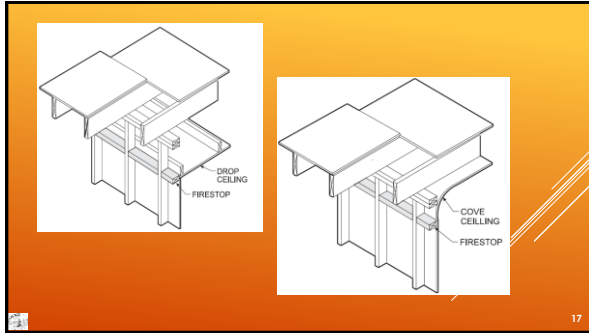
IBC & IRC includes line "with approved material to resist the free passage of flame and products of combustion"



R302.11

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FIRE BLOCKING

FIRE BLOCK CONSTRUCTION

- 2 x nominal lumber
- 2-1" nominal lumber with broken lap joints
- 23/32 WSP w/ joints backed (.715 thickness)
- ¾" type 2-M particleboard with joints backed

R302.11.1

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FIRE BLOCKING

R502.2.2 - Blocking and Subflooring

- Blocking for fastening panel edges or fixtures shall be not less than utility grade lumber. Subflooring shall be not less than utility grade lumber, No. 4 common grade boards or wood structural panels as specified in Section R503.2. **Fireblocking shall be of any grade lumber.**

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FIRE BLOCKING

CONSTRUCTION CONTINUED

- ½" Gypsum
- ¼" Cement fiber board
- Batts or blankets of mineral or glass fiber or installed to be securely retained in place
NOT USED
- Loose fill insulation unless specifically tested

R302.11.1

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FIRE BLOCKING

OTHER ITEMS BEING USED

- Sheathing material **if** listed in other standards or third party testing
- Spray foams **if** listed and labeled:
Class I flame spread
0-25 range

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FIRE BLOCKING

FIRE BLOCK CONSTRUCTION

Unfaced fiberglass batt insulation used as fireblocking shall fill the entire cross section of the wall cavity to a minimum height of 16"

When obstructions are encountered, the insulation shall be packed tightly around the obstruction

R302.11.1.1

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FIRE BLOCKING IRC

R302.11.1.1 Batts or blankets of mineral or glass fiber

R302.11.1.2 Unfaced fiberglass.

R302.11.1.3 Loose-fill insulation material – **Shall Not**

R302.11.2 Fireblocking integrity.
The integrity of all fireblocks shall be maintained.



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FIREBLOCKING

ASTM 136 & 814

R302.10.2 Loose-fill insulation.

Loose-fill insulation materials that cannot be mounted in the ASTM E 84 or UL 723 apparatus without a screen or artificial supports shall comply with the flame spread and smoke-developed limits of Section R302.10.1 when tested in accordance with CAN/ULC S102.2.

Exception: Cellulose loose-fill insulation shall not be required to be tested in accordance with CAN/ULC S102.2, provided such insulation complies with the requirements of Section R302.10.1 and Section R302.10.3.

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FIREBLOCKING

■ Spaces between chimneys and floors and ceilings through which chimneys pass shall be fireblocked with noncombustible material securely fastened in place.

■ The fireblocking of spaces between chimneys and wood joists, beams or headers shall be self-supporting or be placed on strips of metal or metal lath laid across the spaces between combustible material and the chimney.

R1003.19 Chimney fireblocking.

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Combustible construction where there is **usable** space both above and below the concealed space of a floor/ceiling assembly, draftstops shall be installed so that the area of the concealed space does not exceed 1,000 sq.ft.



DRAFTSTOPPING

R302.12

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Assembly is enclosed,
 - by a floor membrane above and a ceiling membrane below,
 ❖ draftstopping shall be provided in floor/ceiling assemblies under the following circumstances:

1. Ceiling is suspended under the floor framing.
2. Floor framing is constructed of truss-type open-web or perforated members.

DRAFTSTOPPING

R302.12

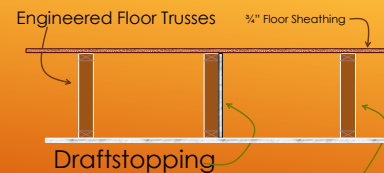
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R109.1.4

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DRAFTSTOPPING IN FLOOR TRUSSES

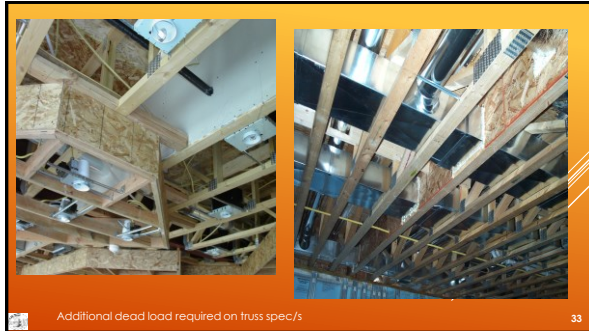


Floor Truss Spec. Dead Load Required to be Adjusted.

When is the proper time to inspect draftstopping?

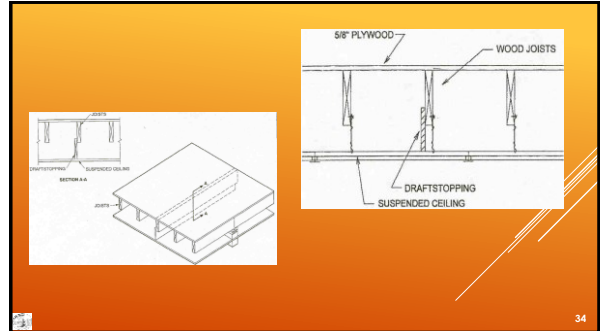
R502.12 to R302.12 Draftstopping
R109.1.4

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Additional dead load required on truss spec/s

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- Draftstopping materials shall not be less than ½" gypsum board,
- 3/8-inch WSP **or** other approved materials adequately supported.
- Draftstopping shall be installed parallel to the floor framing members unless otherwise approved by the building official.
- The integrity of the draftstops shall be maintained.

DRAFTSTOPPING

R302.12.1 Materials

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- Combustible insulation shall be separated a minimum of 3" from recessed luminaires, fan motors and other heat-producing devices.

■ **Exception:** Where heat-producing devices are listed for lesser clearances, combustible insulation complying with the listing requirements shall be separated in accordance with the conditions stipulated in the listing.

- Recessed luminaires installed in the building thermal envelope shall meet the requirements of Section N1102.4.4 of this code.

DRAFTSTOPPING

R302.14 Combustible insulation clearance

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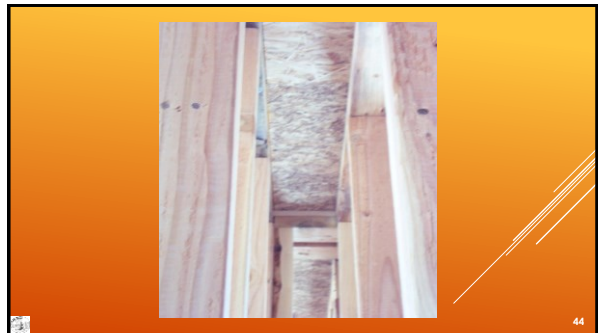
IBC ARCHITECTURAL TRIM

- Concealed spaces of exterior wall finish and other arch elements erected with combustible frames, at maximum intervals of 20'

Exceptions

- Not required cornices in single family
- Only at line of dwelling separation
- Not required where installed on noncombustible exterior wall finish







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FRAMING INSPECTION

Fireblocking required.

"Shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space."



IRC section R302.11

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FRAMING INSPECTION

Fireblocking required.

"Shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space."



IRC section R302.11

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FRAMING INSPECTION

Fireblocking required.

"Shall be provided to cut off all concealed draft openings (both vertical and horizontal) and to form an effective fire barrier between stories, and between a top story and the roof space."



IRC section R302.11, R602.8, R1001.12

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FIREBLOCKING

Unfaced fiberglass batt insulation used as fire blocking shall fill the entire cross section of the wall cavity to a minimum height of 16 inches measured vertically. When piping, conduit or similar obstructions are encountered, the insulation shall be packed tightly around the obstruction.



R302.11.1.2

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FIRE PROTECTION OF FLOORS.

- Floor assemblies, not required elsewhere in this code to be fire-resistance rated,
- **Shall** be provided with a ½" gypsum wallboard membrane,
- 5/8" wood structural panel membrane, or
- equivalent on the underside of the floor framing member.



R302.12

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Insulation Flame Spread



R302.10.1 Insulation. Insulating materials installed within floor-ceiling assemblies, roof-ceiling assemblies, wall assemblies, crawl spaces and attics shall comply with the requirements of this section. They shall exhibit a flame spread index not to exceed 25 and a smoke-developed index not to exceed 450 where tested in accordance with ASTM E84 or UL 723. Insulating materials, where tested in accordance with the requirements of this section, shall include facings, where used, such as vapor retarders, vapor permeable membranes and similar coverings.

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FIRE PROTECTION OF FLOORS

Exceptions:

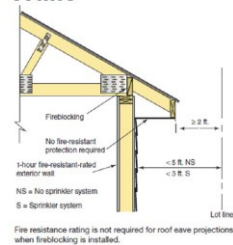
1. Floor assemblies protected by an automatic sprinkler . . .
2. Crawl space not intended for storage or fuel-fired or electrical-power heater appliances.
3. Portions of floor assemblies can be unprotected when complying with the following:
 - 3.1. The aggregate area of the unprotected portions shall not exceed 80sq ft per story
 - 3.2. Fire blocking in accordance with Section R302.11.1 shall be installed along the perimeter of the unprotected portion to separate the unprotected portion from the remainder of the floor assembly.
4. Wood floor assemblies using dimension lumber or structural composite lumber 2 X 10, or other approved floor assemblies demonstrating equivalent fire performance.

R302.11

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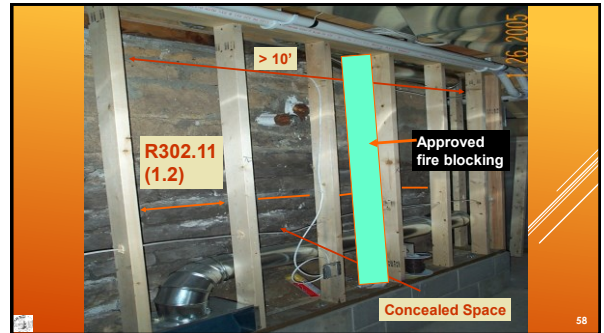
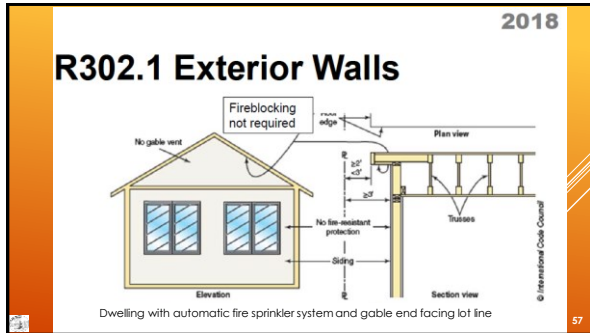
R302.1 Exterior Walls

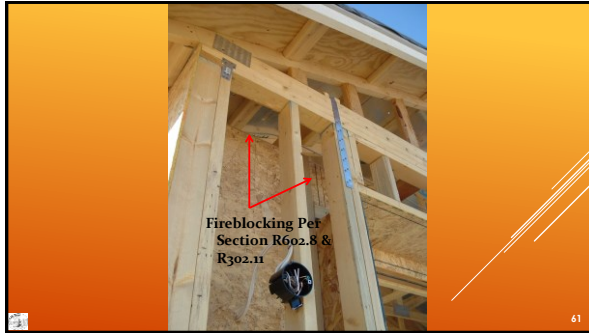
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Fire resistance rating is not required for roof eave projections when fireblocking is installed.

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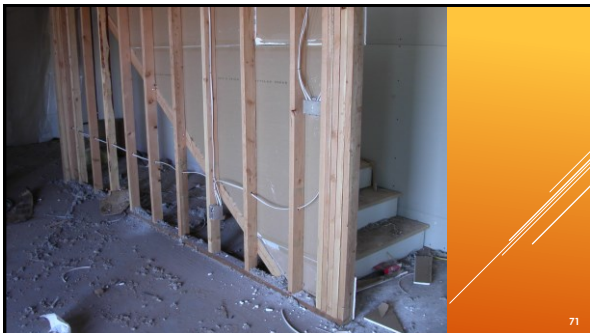




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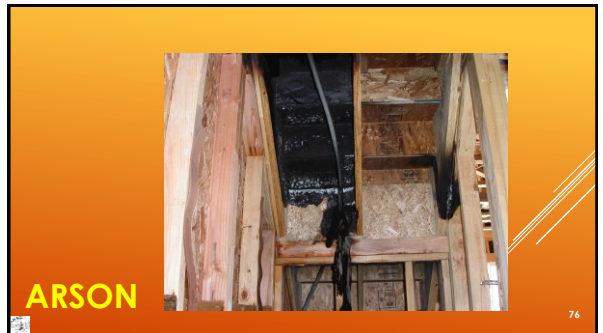
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R109.1 Types of inspections.

Inspection of framing and masonry construction shall be made after the roof, masonry, framing, firestopping, draftstopping and bracing are in place and after the plumbing, mechanical and electrical rough inspections are approved.

R109.1.4 Frame and masonry inspection

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FIREBLOCKING

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FIREBLOCKING (OFFSET)

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CONCEALED SPACES & DRAFTSTOPPING

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**CONCEALED SPACES &
DRAFTSTOPPING**

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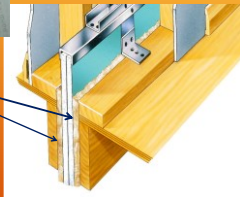


FIREBLOCKING

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Fire stopping:
Rock wool or insulation or
Approved spray foam or
Additional sheetrock



FIREBLOCKING

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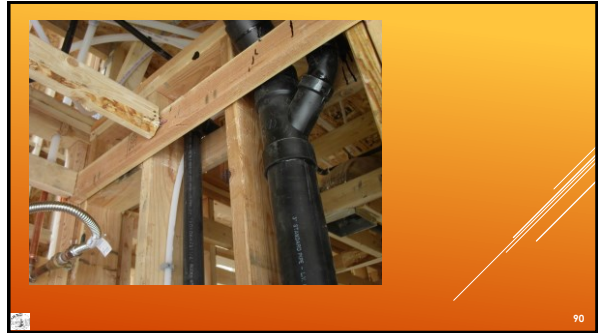
Missing Fire
stopping

FIREWALLS

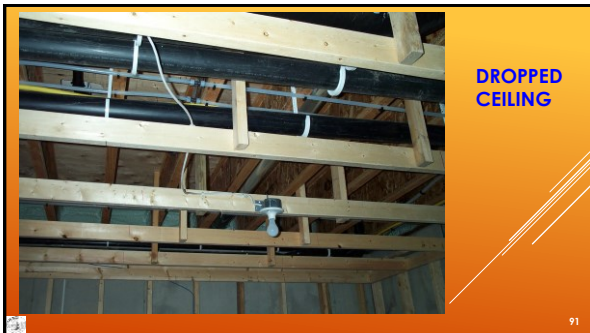
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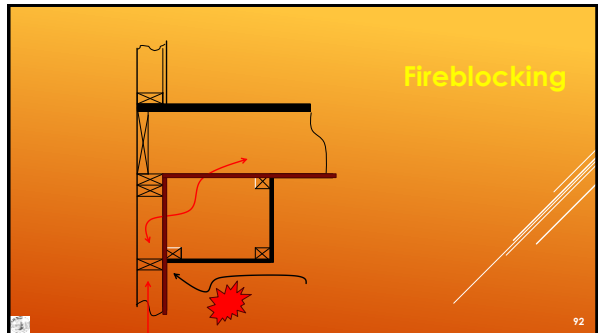


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**DROPPED
CEILING**

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Fireblocking

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